

SPACE OPERATIONS SYMPOSIUM (B6)
Human Spaceflight Operations Concept (1)

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UTILIZING LIFE CYCLE COST ANALYSIS IN THE DESIGN OF THE ALTAIR LUNAR LANDER

Abstract

Life Cycle Cost Analysis (LCCA) is broadly used in the development of both civilian and military systems. For projects ranging from building and road construction, to large scale weapon systems, LCCA provides vital information leading to a design that meets system performance goals while minimizing cost over the design, production, operations, and disposal phases of the project.

Utilizing LCCA in the design of the Altair lunar lander presents special challenges due to the unique nature of the Altair's performance goals, high reliability requirements, variations in service life for each mission type, and the technology readiness levels of systems under development. In spite of these challenges, an effective, iterative and comprehensive LCCA must begin early in the design phase, since most of the total life cycle cost is determined by decisions made prior to the System Design Review (SDR). For example, decisions on hardware and software configurations that drive requirements such as testing and maintenance, and effect system reliability, hazardous operations and safety, have a direct impact on overall life cycle cost and ultimately project viability.

This paper will present the unique challenges of performing LCCA for the Altair lander, describe the high leverage trade studies required, discuss the analysis tools, models and processes used, and described results achieved to date.

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